Chapter 4. Hydrology and Water Quality

Local climate is typically Mediterranean, with hot, dry summers and wet winters. Seasonal rainfall averages 36 inches with most precipitation occurring October through May. The Plan area is within two watersheds, one draining north to Lake Combie and the Bear River, and the other west to Dry Creek. The Plan area also is dissected by the Bowman and Bear River Canals. Figure 4-1 shows watershed planning areas.

Terrain varies from meadows to gently rolling hills and steep hillsides. Streams are characterized by relatively steep slopes and moderate relief, with narrow, rocky channels. Soils consist of a shallow veneer of loam overlying nearly impervious bedrock, exhibiting moderate to high runoff potential and slow infiltration rates when thoroughly wetted. When exposed to prolonged rainfall, these soils become saturated and contribute to flooding.

Incidence of flooding along the Bear River and its tributaries (Wooley Creek and several unnamed intermittent drainages) are not well documented. The February 1995 storms are the largest on record, estimated to be a 100-year event (based on information from the Dry Creek watershed). Other watercourses not shown on this figure may also pose significant flood hazards. All water courses shown on Figure 4-2 should be considered as possible sources of flooding.

Canals and Reservoirs

A network of open and often unlined canals owned and operated by the Placer County Water Agency (PCWA) and PG&E cross the Plan area. The source of water for the canals is the Yuba/Bear River System. The PCWA and PG&E canals are used for irrigation and influent for municipal treatment. Some residents use this water for domestic supply usually with little or no treatment.

Surface Water Quality

Little data on streamflow and water quality for streams were found in a review of water agency records. Limited water quality data, however, is available from PCWA's canal and water distribution system. Although the source of PCWA's water is outside the Plan area, its canal distribution system runs through the Plan area where a portion of these flows feed local streams. The State Water Resources Control Board

Figure 4-1: Planning Watersheds

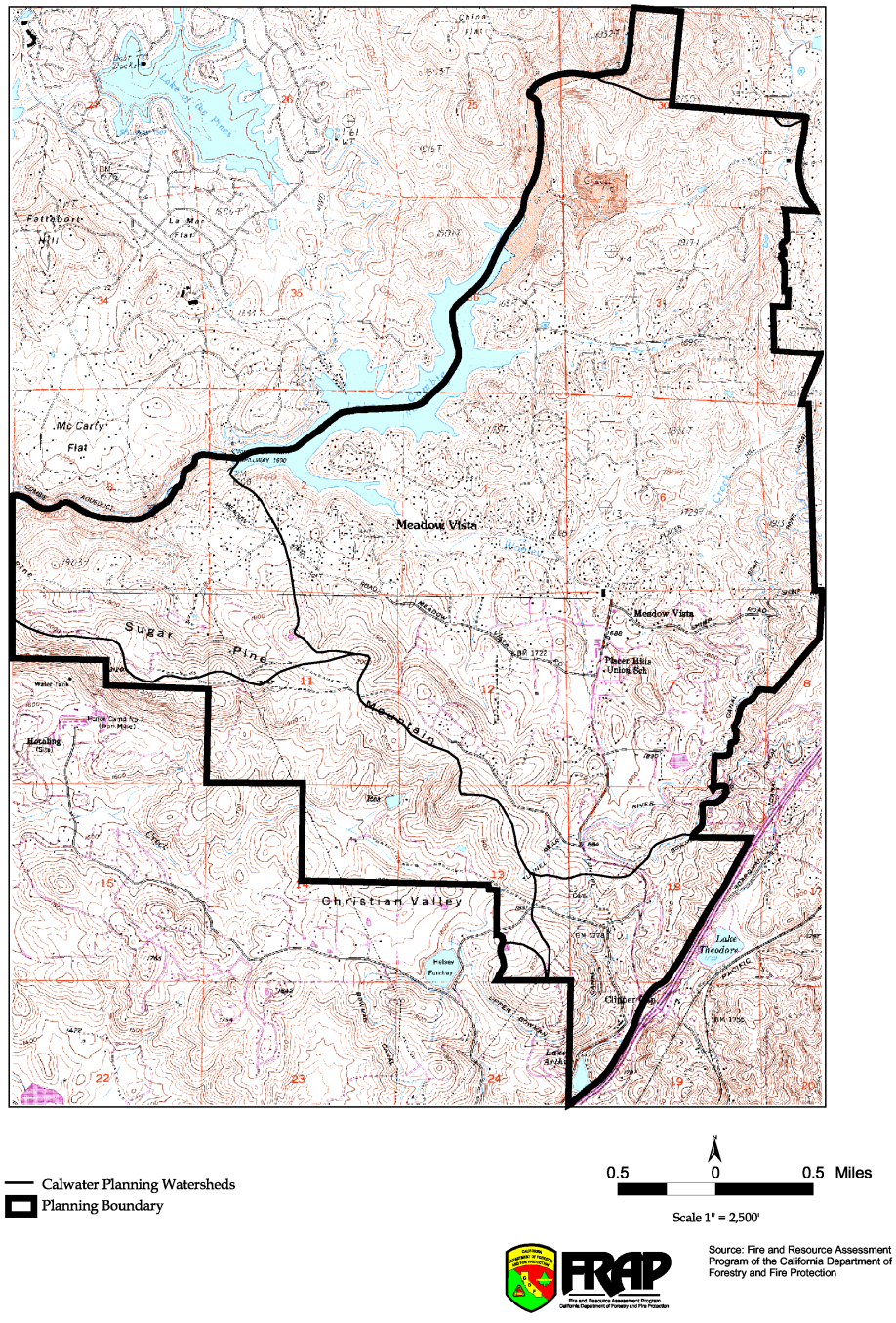

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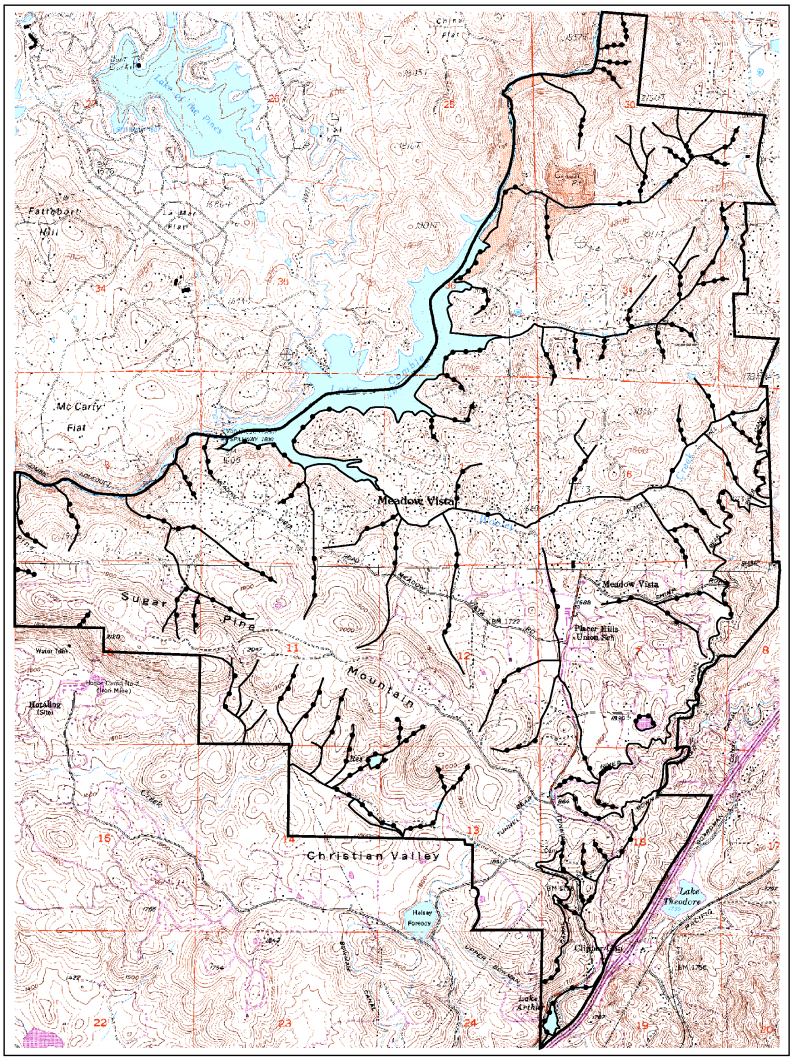
Figure 4-2: Watercourses



(SWRCB) requires that the Foothill Water Treatment Plant operated by PCWA monitor the receiving water both upstream and downstream of the effluent discharge sites.

No data exists for the volume of water the canal distribution systems supplies Plan area streams. Unknown volumes of stream inflow (e.g., urban runoff and spills) combined with water supplies from the canal system have generated perennial streams that were historically intermittent. Visual observations indicate that waterways have become increasingly cloudy, although the exact source of this pollution is unknown. Since no "point-source" discharge occurs in the Plan area (point source is a specific managed source of pollution, such as a wastewater treatment outfall to a stream), this effect reasonably can be assumed to be the result of various "non-point sources" of pollution.

Stormwater Runoff. Stormwater runoff from rural and urban areas may contain excessive levels of pollutants (i.e., nutrients, sediments, pesticides, herbicides, and hydrocarbons) that could be contributing to degradation of local waterways. Water quality degradation from stormwater runoff is primarily the result of runoff carrying pollutants from the land surface (i.e., streets, parking lots, and pastures) to receiving waters (i.e., canals, streams, lakes, and reservoirs). This type of pollution is referred to as "non-point source" pollution because it generally discharges into surface waters in a diffuse manner and at intermittent intervals that are related mostly to the occurrence of meteorological events. Non-point sources generally cannot be monitored at their point or origin, and their exact source is difficult or impossible to trace. The types of pollutants that may be transported to the receiving waters depend on the land use and the associated land use activities in the area.

In the Meadow Vista Community, non-point source pollution is a concern because of potential impacts on open canal drinking water supplies and to aquatic biological resources.

Stream Spills. Streams and canals intersecting or near roads are vulnerable to contamination by accidental spills. Contaminants may include gasoline, pesticides, herbicides, and other ecologically harmful chemicals.

Regulations and Permits

Floodplain Management. PCGP policies and ordinances regarding floodplain management are implemented in review processes at various levels. Identification of

flood hazard areas and appropriate setbacks are required at all levels of project approval. Projects are required to comply with the Land Development Manual, the Stormwater Management Manual, and the Flood Damage Prevention Ordinance. These requirements are implemented at the improvement plan and site inspection stages.

State Water Quality Law, Plans, and Policies

The State Water Resources Control Board (SWRCB) is the primary state agency responsible for formulating policies to protect the state's surface waters and groundwater supplies and approves water quality control plans prepared by each Regional Water Quality Control Board (RWQCB). The federal Environmental Protection Agency (EPA) has granted California primacy in administering and enforcing provisions of the Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES). NPDES is the primary national program that regulates point source and non-point source discharges to surface waters. EPA oversees the review of waste discharge permits and CWA grant proposal applications. Each RWQCB has developed a basin plan for its region that identifies important regional water resources and beneficial uses, and provides for the prevention and abatement of waste pollution and nuisance. The plans also provide the basis for determining waste discharges, taking enforcement actions, and evaluating CWA grant proposals. Basin plans are reviewed approximately every three years. The Plan area is within the jurisdiction of the Central Valley RWQCB, Region 5.

Floodplain Management Regulations. The Federal Emergency Management Agency (FEMA) is responsible for identifying and mapping floodplains, and development within these floodplains is subject to the requirements set for in the Federal Insurance Act. The 100-year floodplain for portions of Wooley Creek and the Bear River have been mapped by FEMA.

Section 404 Permits. Section 404 of the CWA prohibits the discharge of dredged or fill material into waters of the United States or adjacent or isolated wetlands without a permit from the Corps.

Stream Alteration Permits. The California Department of Fish and Game requires a Section 1601 or 1603 Stream Alteration Permit for any work in the waterway which disturbs or alters habitat.

IMPACTS

Criteria for Determining Significance

According to the State CEQA Guidelines (Appendix G), a project will normally have a significant effect on the environment if it will:

- Substantially degrade water quality;
- Contaminate a public water supply;
- Cause substantial flooding, erosion, or siltation.

Relevant Community Plan Goals and Policies

The Community Plan contains goals, policies, and implementation programs to protect water resources, provide flood protection, and regulate stormwater drainage.

9.B.3. The County shall require development projects proposing to encroach into a creek corridor or creek setback to do one or more of the following, in descending order of desirability:

a. Avoid the disturbance of riparian vegetation;
b. Replace riparian vegetation (on-site, in-kind);
c. Restore another section of creek (in-kind); and/or
d. Pay a mitigation fee for restoration elsewhere(e.g., a wetland mitigation banking program). [6.A.3.]

9.B.4. Where creek protection is required or proposed, the County should require public and private development to:

c. Protect creek corridors and their habitat value by actions such as: 1) providing an adequate creek setback; 2) maintaining creek corridors in an essentially natural state; 3) employing creek restoration techniques where restoration is needed to achieve a natural creek corridor; 4) utilizing riparian vegetation within creek corridors and, where possible, within creek setback areas; 5) prohibiting the planting of invasive, non-native plans (such as vinca major and eucalyptus) within creek corridors or creek setbacks; and 6) avoiding tree removal within creek corridors.

9.B.5. The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff and to encourage the use of BMPs for agricultural activities. [6.A.5.]

9.B.10. The County shall encourage the preservation and protection of open space located in watersheds which serve reservoirs due to its importance in the adequate performance of those reservoirs for their intended purposes.

The watershed is defined as those lands draining into a reservoir and having an immediate effect upon the quality of water within that reservoir. Those lands located within the watershed and with 5,000 feet of the reservoir shall be considered as having an immediate effect. For Meadow Vista, this includes Lake Combie watershed and the Lake Arthur/Lake Theodore watershed. [6.A.11., 12/30]

5.F.8. The County shall preserve or enhance the aesthetic qualities of natural drainage courses in their natural or improved state compatible with flood control requirements and economic, environmental, and ecological factors. [4.F.10.]

Impact Analysis

Surface Water

Hydrology. Changes in interception and infiltration rates with vegetation removal and the construction of tractor roads associated with the proposed project could contribute to existing flooding problems in Wooley Creek and along the Bear River. Stormwater runoff generated from new roadways and changes in landscape would increase the volume and rate of water entering local waterways. Clearcutting, in particular, can in some cases cause large increases in peak flows. The impact is considered significant because of the potential for exacerbating existing flooding problems, which may result in localized flooding and the potential for property damage.

Canals and Reservoirs. Several canals and reservoirs in the Plan area may be subjected to water quality degradation through the interception of stormwater runoff

increased by vegetation removal. As development of lands adjacent to these open canals and reservoirs occurs, the likelihood for increase pollutant levels increases. Use of heavy equipment, slash, and yarding could result in a possible decrease in water quality in the canals and reservoirs in the Plan area. This impact is considered significant because the canals and reservoirs are used for irrigation and domestic supply.

Surface Water Quality. Some streams and canals are used as a domestic water supply source without any form of pretreatment. Protection of surface waters, therefore, is important from both a quantity and quality perspective. Vegetation management activities could cause short-term impacts on water quality because of potential increased sediment loading and turbidity.

Disturbances that remove natural cover or change site topography with construction of access roads could result in increased sediment and nutrient loading from individual project sites. The degree to which these activities affect water quality is determined largely by the nature, extent, and timing of project activity and rainfall. Consequently, sediment levels resulting from vegetation management activities would be less in summer than during winter. Vegetation management activities could result in possible short-term and long-term water quality degradation of streams. In addition to sedimentation impacts, use of heavy equipment presents the potential for accidental spills of pollutants such as gasoline, oil, and diesel fuel. While current Forest Practice Rules cover the servicing and disposal of certain products, there is nothing specific in the rules that deals with accidental release of oil or other chemicals except that they must be cleaned up.

It is the intent of the Board of Forestry, however, to restore, enhance, and maintain the productivity of timberlands while providing equal consideration for the beneficial uses of water. Further, it is the intent of the Board to clarify and assign responsibility, to recognize potential impacts of timber operations on the beneficial uses of water, and to adopt feasible measures to prevent water pollution related to timber harvesting. (936)

These impacts are considered significant because of the high quality of water in area streams and the numerous beneficial uses associated with water resources.

California Forest Practice Rules Requirements

All applicable Forest Practice Rules will apply to any PTHP undertaken pursuant

to this PTEIR. The following Rules are particularly relevant for hydrology and water quality. As part of the project description, these requirements will reduce many potential impacts to a less than significant level.

1. The Registered Professional Forester (RPF) shall conduct a field examination of all lakes and watercourses and shall map all lakes and watercourses which contain Class I, II, III or IV waters. As part of this field examination, the RPF shall evaluate areas near watercourses and lakes for sensitive conditions including, but not limited to, use of existing roads within the standard Watercourse and Lake Protection Zone (WLPZ) width, unstable and erodible watercourse banks, debris jam potential, flow capacity and changeable channels, overflow channels, and flood prone areas. The RPF shall consider these conditions when proposing WLPZ widths and protection measures. The PTHP shall identify such conditions where they may interact with proposed timber operations to significantly and adversely affect the beneficial uses of water, and shall describe measures to protect the beneficial uses of water. (936.4(a))

2. When the protective measures contained in 14 CCR 936.5 are not adequate to provide protection to beneficial uses, feasible protective measures shall be developed by the RPF or proposed by the Director under the provisions of 14 CCR 936, Alternative Watercourse and Lake Protection, and incorporated in the THP when approved by the Director. (936.2)

3. The quality and beneficial uses of water shall not be unreasonably degraded by timber operations. The timber operator shall not place, discharge, or dispose of in such a manner as to permit to pass into the water of this state, any materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, or the quality and beneficial uses of water. All provisions of this article shall be applied in a manner which complies with this standard. (936.3)

4. The accidental depositions of soil or other debris in lakes or below the watercourse or lake transition line in waters classed I, II and IV shall be removed immediately after the deposition or as approved by the Director. (936.3(b))

5. Require removal of logging debris from Class III waterways by October 15 of the current year. (936.4 (c)(3))

6. The following standards shall be adhered to in servicing logging equipment and

disposing of refuse, litter, trash and debris:

a. Equipment used in timber operations shall not be serviced in locations where servicing will allow grease, oil, or fuel to pass into lakes or watercourses.

b. Non-biodegradable refuse, trash, and debris resulting from timber operations, and other activity in connection with the operations shall be disposed of concurrently with the conduct of timber operations. (934.5)

7. The RPF shall notify all landowners within 1,000 feet downstream from the proposed operating area on certain defined watercourses to request information on surface water withdrawal for domestic water use from those watercourses. The RPF shall publish a Public Notice in a local newspaper, requesting the same information. If domestic use withdrawals occur in the area, then the PTHP must include measures to protect that water use. (1092.7)

8. When proposed timber operations may threaten to degrade a domestic water supply, the Director shall evaluate any mitigation measures recommended prior to the close of the public comment period (PRC 4582.7) and shall require the adoption of those practices which are feasible and necessary to protect the quality and beneficial use of the supply. (936.10(a))

9. When necessary to protect the beneficial use of water, the RPF shall designate and the Director may require a WLPZ or equipment limitation zone for Class III and Class IV waters. Required protection measures may include surface cover retention, vegetation protection, equipment limitations, and timber falling limitations. (936.4(c)(1))

MITIGATION

(See also Mitigation in Chapter 3, Geology and Soils)

1. Establish watercourse and lake protection buffer zones along perennial watercourses in which vegetation removal, fuel reduction, and ground disturbance are limited. The width of the buffer zone is dependent on the adjacent hillside slope and watercourse class as shown below:

	Watercourse Class		
Hillside Slope	Fish Bearing I	Non-Fish Bearing II	Intermittent III
0-30%	75 feet	50 feet	25 feet
30-50%	100 feet	75 feet	50 feet
50% >	150 feet	100 feet	50 feet

2. Prohibit heavy equipment from streamside buffer zones except at designated crossings.

3. Restrict new road construction to less than 100 feet in length with no construction within any watercourse buffer zone.

4. Prohibit clearcut harvesting.

Level of Significance Following Recommended Mitigation

With implementation of recommended mitigation measures, potential impacts to hydrology and water quality will be reduced to a less than significant level.